TOPIC 3 — PERIODICITY
3.1 — PERIODIC TABLE

IB Chemistry

T03D01

Mr. Martin Brakke

3.1 – Periodic Table – 1 hr

- 3.1.1 Describe the arrangement of elements in the periodic table in order of increasing atomic number. (2)
- 3.1.2 Distinguish between the terms group and period.(2)
- 3.1.3 Apply the relationship between the electron arrangement of elements and their position in the periodic table up to Z = 20. (2)
- 3.1.4 Apply the relationship between the number of electrons in the highest occupied energy level for an element and its position in the periodic table. (2)

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Periodic Table

3.1.1 Describe the arrangement of elements in the periodic table in order of increasing atomic number. (2)

- The **Periodic Law** states that when the elements are arranged in order of increasing atomic number, there is a periodic repetition of their physical and chemical properties
- **Mendeleev** organized all of the elements into one comprehensive table.
  - Elements were arranged in order of increasing mass.
  - Once that was completed elements with similar properties were placed below each other in the same group

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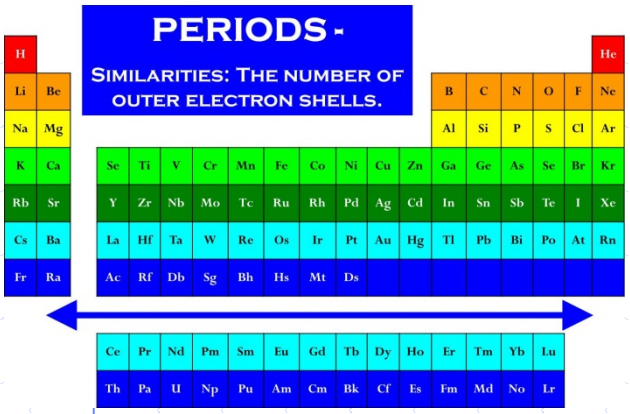
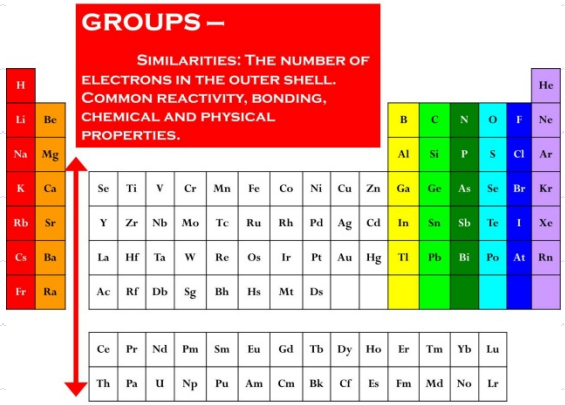
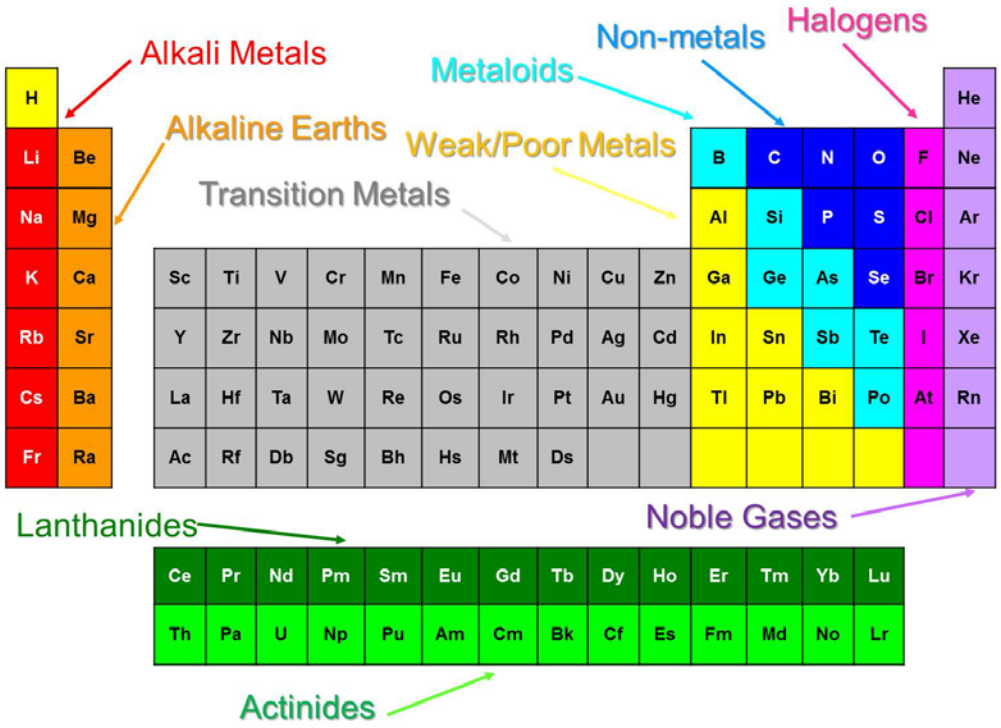
Groups vs Periods

3.1.2 Distinguish between the terms group and period.(2)







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Electron Arrangement vs Position

3.1.3 Apply the relationship between the electron arrangement of elements and their position in the periodic table up to Z = 20.

1																	2
2.1	2.2											2.3	2.4	2.5	2.6	2.7	2.8
2.8.1	2.8.2											2.8.3	2.8.4	2.8.5	2.8.6	2.8.7	2.8.8
2.8.8.1	2.8.8.2																

- The electron arrangement repeats, just as the valence electron's do.
- Once you pass 20 and get into the d-block and f-block electrons, the trend still continues but it makes more sense when represented in the electron configurations of $1s^2 2s^2 2p^6$, etc

Valence vs Position

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3.1.4 Apply the relationship between the number of electrons in the highest occupied energy level for an element and its position in the periodic table. (2)

- In reference to the previous slide
  - Valence electrons repeat along with the group
  - It can be demonstrated much easier (past 20) when in the electron configuration